Classification of Stream Sensitivity: A Framework for Monitoring, Assessment and Diagnosis

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A watershed classification approach, based on differences in sensitivity of streams to nonpoint-source stressors, has been developed and applied in three pilot projects within the Great Lakes Basin and eastern U.S. First, the natural and anthropogenic watershed characteristics that control the stability of flow regimes are determined. Thresholds of change for these characteristics are identified, that, once exceeded, can induce rapid changes in hydrology, pollutant loadings, degradation of instream habitat, and biological impairment. In the most comprehensive pilot, a watershed classification framework was developed for the entire state of West Virginia, based on thresholds related to land-use and indicators of water storage in the landscape. The watershed classes were used as strata in a probabilistic survey design to assess water quality, habitat, and fish community condition of all wadeable streams draining 12-digit HUCs. This process can readily be applied to other states and regions. Hydrologic thresholds already have been derived for homogeneous flood regions within all coastal and Great Lake states.